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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/028,161

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Lloyd E. Thorsbakken

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EXAMINER

CLEARY, THOMAS J

ART UNIT

PAPER NUMBER

2111

DATE MAILED: 06/17/2004

2

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,161

Applicant(s)

THORSBAKKEN ET AL.

Examiner

Thomas J. Cleary

Art Unit

2111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☒ Claim(s) 24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 2 recites the limitation "the other agents" in Line 2. There is insufficient antecedent basis for this limitation in the claim.
3. Claim 36 recites the limitation "The cooperative arbitration and processing resource allocation system" in Line 1. There is insufficient antecedent basis for this limitation in the claim. For the purposes of evaluating prior art, Examiner will assume Claim 36 is dependent on Claim 35.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 6,055,598 to Lange ("Lange").

6. In reference to Claim 1, Lange teaches a method for managing the processing of commands issued on a bus via a plurality of agents, comprising: allocating ownership of the bus to the plurality of agents based on a predetermined bus arbitration order (See Column 3 Lines 45-50); queuing agent identifiers of the agents that issued commands which were retried due to unavailable processing resources (See Column 3 Lines 50-54 and Column 10 Lines 27-39); and granting command processing priority of the processing resources to agents corresponding to the queued agent identifiers relative to other agents having ownership of the bus in accordance with the predetermined bus arbitration order (See Column 10 Lines 40-57).

7. In reference to Claim 2, Lange teaches the limitations as applied to Claim 1 above. Lange further teaches issuing retry responses for commands issued by the other agents to avail the processing resources to the agents corresponding to the queued agent identifiers (See Column 3 Lines 50-51).

8. In reference to Claim 3, Lange teaches the limitations as applied to Claim 1 above. Lange further teaches that the agent identifiers for retried commands are placed into a queue which inherently operates in a first-in, first-out fashion (See Column 3

Lines 45-50 and Column 10 Lines 32-39), and thus processing priority is granted to the agents in an order in which the agent identifiers were queued relative to each other.

9. In reference to Claim 4, Lange teaches the limitations as applied to Claim 1 above. Because the agent identifiers of the commands that are to be retried of Lange are placed into a queue (See Column 3 Lines 45-50 and Column 10 Lines 32-39), queuing the agent identifiers is inherently done in a first-in, first-out fashion, since queues are inherently first-in, first-out structures.

10. In reference to Claim 5, Lange teaches the limitations as applied to Claim 4 above. Because the agent identifiers of the commands that are to be retried of Lange are placed into a queue, which inherently operates in a first-in, first-out fashion (See Column 3 Lines 45-50 and Column 10 Lines 32-39), command processing priority is granted to the agents in a first-in, first-out fashion.

11. In reference to Claim 6, Lange teaches the limitations as applied to Claim 1 above. Lange further teaches always granting command processing priority to the agents corresponding to the queued agent identifiers relative to the other agents having ownership of the bus (See Column 10 Lines 40-57).

12. In reference to Claim 7, Lange teaches the limitations as applied to Claim 1 above. Because the agent identifiers of the commands that are to be retried of Lange

are placed into a queue, which inherently operates in a first-in, first-out fashion (See Column 3 Lines 45-50 and Column 10 Lines 32-39), command processing priority is granted to the agents in a first-in, first-out fashion. A first-in, first-out algorithm, like that used to grant command processing priority to the agents, is a type of fairness algorithm.

13. In reference to Claim 8, Lange teaches the limitations as applied to Claim 7 above. Lange further teaches regulating the command processing priority between the agents corresponding to the queued agent identifiers and the other agents having ownership of the bus (See Column 10 Lines 27-57).

14. In reference to Claim 9, Lange teaches the limitations as applied to Claim 8 above. Lange further teaches selectively granting the command processing priority of the processing resources to agents corresponding to the queued agent identifiers relative to the other agents having ownership of the bus (See Column 10 Lines 27-57).

15. In reference to Claim 11, Lange teaches the limitations as applied to Claim 1 above. Lange further teaches that retried items are not placed back onto the queue unless certain conditions are met, which is equivalent to queuing only those agent identifiers complying with the queue entry rules (See Column 9 Line 51 – Column 10 Line 26).

16. In reference to Claim 12, Lange teaches the limitations as applied to Claim 11 above. Lange further teaches that a retried item is not placed back onto the queue when the retried item has already been placed onto a queue (See Column 9 Line 51 – Column 10 Line 26).

17. In reference to Claim 13, Lange teaches the limitations as applied to Claim 11 above. Lange further teaches that a item that is reissued by the initiating device will not be placed back on the queue if said item from said initiating device is currently being processed (See Column 9 Line 51 – Column 10 Line 26).

18. Claims 14, 18, 19, 21, 22, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 6,029,217 to Arimilli et al. ("Arimilli").

19. In reference to Claim 14, Arimilli teaches a method for managing the processing of commands issued on a bus via a plurality of agents, comprising: allocating bus ownership to the plurality of agents based on a predetermined bus arbitration cycle (See Column 6 Lines 10-21); determining whether processing resources are available to process the commands issued by the agents that have been granted bus ownership (See Column 6 Lines 49-51); initiating a retry for the commands that were not processed due to unavailable processing resources (See Column 6 Lines 36-53); queuing agent identifiers corresponding to each of the agents in which a retry was initiated (See Column 5 Lines 21-45 and Column 6 Lines 49-53); and overriding the

predetermined bus arbitration cycle and processing the commands associated with the agent identifiers that have been queued (See Column 6 Lines 55-59).

20. In reference to Claim 18, Arimilli teaches the limitations as applied to Claim 14 above. Arimilli further teaches that overriding the predetermined bus arbitration cycle comprises allowing processing of the commands associated with the queued agent identifiers vis-à-vis the commands issued on the bus in accordance with the predetermined bus arbitration cycle (See Column 6 Lines 51-59).

21. In reference to Claim 19, Arimilli teaches the limitations as applied to Claim 14 above. Arimilli further teaches that a retry response is issued in response to determining that the processing resources are unavailable (See Column 6 Lines 49-51).

22. In reference to Claim 21, Arimilli teaches the limitations as applied to Claim 14 above. Arimilli further teaches that the processing resources comprise a load operation, which is equivalent to a read thread (See Column 6 Lines 26-32).

23. In reference to Claim 22, Arimilli teaches the limitations as applied to Claim 14 above. Arimilli further teaches that the processing resources comprise a store operation, which is equivalent to a write thread (See Column 6 Lines 26-32).

24. In reference to Claim 35, Arimilli teaches a cooperative arbitration and processing resource allocation system for managing the processing of commands issued on a bus via a plurality of agents, comprising: means for allocating ownership of the bus to the plurality of agents based on a predetermined bus arbitration order (See Column 6 Lines 10-21); means for queuing agent identifiers of the agents that issued commands which were retried due to unavailable processing resources (See Column 5 Lines 21-45 and Column 6 Lines 49-53); and means for granting command processing priority of the processing resources to agents corresponding to the queued agent identifiers relative to other agents having ownership of the bus in accordance with the predetermined bus arbitration order (See Column 6 Lines 53-59).

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lange as applied to Claim 9 above, and further in view of US Patent Application Number 2002/0138670 to Johnson ("Johnson").

27. In reference to Claim 10, Lange teaches the limitations as applied to Claim 9 above. Lange does not teach disregarding the granting of the command processing priority to the agents corresponding to the queued agent identifiers relative to other agents having ownership of the bus in accordance with a configurable pattern. Johnson teaches disregarding the granting to low priority items, which are equivalent to the queued agent identifiers, relative to high priority items, which are equivalent to other agents having ownership of the bus (See Page 2 Paragraph 20 and Page 3 Paragraphs 25 and 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Lange with the low priority queue override of Johnson, resulting in the invention of Claim 23, in order to allow the devices that receive a retry signal to be deferred and granted access later without completely starving said devices from access (See Page 2 Paragraph 20).

28. Claims 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arimilli and Johnson.

29. In reference to Claim 23, Arimilli teaches a method for managing the processing of commands issued on a bus via a plurality of agents, comprising: allocating ownership of the bus to the plurality of agents based on a predetermined bus arbitration order (See Column 6 Lines 10-21); queuing agent identifiers of the agents that issued commands which were retried due to unavailable processing resources (See Column 5 Lines 21-45

and Column 6 Lines 49-53); and granting command processing priority of the processing resources to agents corresponding to the queued agent identifiers relative to other agents having ownership of the bus in accordance with the predetermined bus arbitration order. Arimilli does not teach controlling a frequency in which the command processing is granted priority to the agents corresponding to the queued agent identifiers relative to the other agents having ownership of the bus. Johnson teaches overriding the grant to a queue containing high priority items so that a grant can be issued to a queue containing low priority items, such as the retried items of Arimilli (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 23, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

30. In reference to Claim 24, Arimilli and Johnson teach the limitations as applied to Claim 23 above. Johnson further teaches regulating the frequency at which the low priority items are granted access to the bus over the high priority items by setting a value in a counter (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 24, in order to insure that the lower

priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

31. In reference to Claim 25, Arimilli and Johnson teach the limitations as applied to Claim 24 above. Johnson further teaches a starvation counter which enables the low priority items, which are equivalent to the queued agent identifiers, to be output from a queue after a predetermined number of low priority items have been passed over for processing (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 25, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

32. In reference to Claim 26, Arimilli and Johnson teach the limitations as applied to Claim 25 above. Johnson further teaches comparing a predetermined pass over count to a current pass over count; incrementing the current pass over count each time a valid queued agent identifier has been passed over for processing; and enabling the queued agent identifiers to be output from the queue when the current pass over count reaches the predetermined pass over count (See Page 2 Paragraph 20 and Page 3 Paragraph 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 26, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

33. In reference to Claim 27, Arimilli teaches a cooperative arbitration and resource allocation system, comprising: an established-order arbiter for allocating bus ownership among a plurality of agents (See Column 6 Lines 10-21); and a processing fairness module comprising: a queue to store bus agent identifiers corresponding to bus agents that issued commands which were subjected to a retry due to unavailable processing resources (See Column 5 Lines 21-45 and Column 6 Lines 49-53). Arimilli does not teach that the processing fairness module comprises a queue output throttle to adjust an availability of a valid bus agent ID at an output of the queue; and an override module coupled to the established order arbiter and the processing fairness module to grant command processing priority of the processing resources to either the bus agents corresponding to valid bus agent IDs or to the bus agents that have being granted bus ownership, depending on whether the valid bus agent ID at the output of the queue is available as determined by the queue output throttle. Johnson teaches that the processing fairness module has a starvation counter, which is equivalent to a queue output throttle, which can adjust the availability of items at the output of the queue (See Page 2 Paragraph 20); and an override module to grant access to either the high priority

items, which are equivalent to the bus agents that have been granted bus ownership, or the low priority items, which are equivalent to the bus agents corresponding to valid bus agent IDs, depending on whether the item at the output of the queue is available as determined by the starvation counter (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 27, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

34. In reference to Claim 28, Arimilli and Johnson teach the limitations as applied to Claim 27 above. Johnson inherently includes a maximum starvation register to store a predetermined number of low priority items, which are equivalent to bus agent IDs, that will be passed over for processing (See Page 2 Paragraph 20). Johnson further teaches a current starvation counter to store a current number of low priority items that have been passed over for processing (See Page 2 Paragraph 20); and a compare module coupled to the maximum starvation counter and the current starvation counter to compare the current and predetermined numbers of low priority items that have been passed over for processing (See Page 2 Paragraph 20 and Page 3 Paragraph 26) and to output an availability indicator to indicate the availability of the low priority items (See Page 3 Paragraph 25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 28, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

35. In reference to Claim 29, Arimilli and Johnson teach the limitations as applied to Claim 28 above. Johnson further teaches an incrementing module coupled to the current starvation counter to increment the current starvation counter each time that a low priority item has been passed over for processing (See Page 2 Paragraph 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 29, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

36. In reference to Claim 30, Arimilli and Johnson teach the limitations as applied to Claim 29 above. Johnson further teaches a reset module coupled to the current starvation counter to reset the current starvation counter upon output of the availability indicator (See Page 2 Paragraph 25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override

of Johnson, resulting in the invention of Claim 30, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

37. In reference to Claim 31, Arimilli and Johnson teach the limitations as applied to Claim 28 above. The maximum starvation register of Johnson would inherently include an input to receive the predetermined number of low priority items (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 31, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

38. In reference to Claim 33, Arimilli teaches a system for allocating command processing resources, comprising: a plurality of bus agents each capable of issuing commands (See Figure 1 Numbers 102, 104, 106, and 120); an I/O bus coupled to each of the bus agents to facilitate transfer of commands (See Figure 1 Number 108); a memory bus to facilitate transfer of the commands to and from a memory (See Figure 1 Number 108, 110, and 112); an I/O bridge module to interface the I/O bus and the memory bus (See Figure 1 Numbers 110 and 130), wherein the I/O bridge module comprises: an established-order arbiter for allocating bus ownership among a plurality

of agents (See Column 6 Lines 10-21); and a processing fairness module comprising: a queue to store bus agent identifiers corresponding to bus agents that issued commands which were subjected to a retry due to unavailable processing resources (See Column 5 Lines 21-45 and Column 6 Lines 49-53). Arimilli does not teach that the processing fairness module comprises a queue output throttle to adjust an availability of a valid bus agent ID at an output of the queue; and an override module coupled to the established order arbiter and the processing fairness module to grant command processing priority of the processing resources to either the bus agents corresponding to valid bus agent IDs or to the bus agents that have being ranted bus ownership, depending on whether the valid bus agent ID at the output of the queue is available as determined by the queue output throttle. Johnson teaches that the processing fairness module has a starvation counter, which is equivalent to a queue output throttle, which can adjust the availability of items at the output of the queue (See Page 2 Paragraph 20); and an override module to grant access to either the high priority items, which are equivalent to the bus agents that have been granted bus ownership, or the low priority items, which are equivalent to the bus agents corresponding to valid bus agent IDs, depending on whether the item at the output of the queue is available as determined by the starvation counter (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 33, in order to insure that the lower

priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

39. In reference to Claim 34, Arimilli and Johnson teach the limitations as applied to Claim 33 above. Arimilli further teaches a plurality of the I/O buses each coupled to a plurality of the bus agents (See Figure 1 Numbers 108, 114, 116, and 118). The device of Johnson would inherently include an established order arbiter, a processing fairness module, and an override module for each of the plurality of subsystems, which are analogous to the I/O buses, connected to it.

40. Claims 15, 16, 17, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arimilli as applied to Claim 14 above, and further in view of Johnson.

41. In reference to Claim 15, Arimilli teaches the limitations as applied to Claim 14 above. Arimilli does not teach adjusting a ratio in which the commands issued according to the predetermined bus arbitration cycle and the commands associated with the queued agent identifiers will be processed. Johnson teaches setting a value in a starvation counter which will adjust the ratio in which high priority items, which are equivalent to commands issued according to the predetermined bus arbitration cycle, and low priority items, which are equivalent to commands associated with the queued agent identifiers, will be processed (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 15, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

42. In reference to Claim 16, Arimilli and Johnson teach the limitations as applied to Claim 15 above. The starvation counter value used in the device of Johnson to determine how often low priority items are granted access instead of high priority items is equivalent to a configurable fairness parameter (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 16, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

43. In reference to Claim 17, Arimilli and Johnson teach the limitations as applied to Claim 16 above. The starvation counter value used as a configurable fairness parameter in the device of Johnson is representative of the number of times that the low-priority items will not be allowed to override the high-priority items (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 17, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

44. In reference to Claim 36, Arimilli teaches the limitations as applied to Claim 35 above. Arimilli does not teach a means for controlling a frequency in which the command processing is granted priority to the agents corresponding to the queued agent identifiers relative to the other agents having ownership of the bus. Johnson teaches regulating the frequency at which the low priority items are granted access to the bus over the high priority items by setting a value in a counter (See Page 2 Paragraph 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the low priority queue override of Johnson, resulting in the invention of Claim 36, in order to insure that the lower priority items, such as the retried items of Arimilli, are not starved from bus access (See Page 2 Paragraph 20).

45. Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Arimilli as applied to Claim 14 above, and further in view of Lange.

46. In reference to Claim 20, Arimilli teaches the limitations as applied to Claim 14 above. Arimilli does not teach imposing queue entry rules on the agent identifiers corresponding to the agents in which a retry was initiated, and wherein queuing the agent identifiers comprises queuing only those agent identifiers complying with the queue entry rules. Lange teaches that retried items are not placed back onto the queue unless certain conditions are met, which is equivalent to queuing only those agent identifiers complying with the queue entry rules (See Column 9 Line 51 – Column 10 Line 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli with the queue entry rules of Lange, resulting in the invention of Claim 20, in order to prevent queuing of a command that has already finished completion (See Column 9 Line 51 – Column 10 Line 26 of Lange).

47. Claim 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Arimilli and Johnson as applied to Claim 27 above, and further in view of Lange.

48. In reference to Claim 32, Arimilli and Johnson teach the limitations as applied to Claim 27 above. Arimilli and Johnson do not teach a fairness entry validation module to prohibit entry of the bus agent IDS onto the queue that do not comply with one or more predetermined queue entry rules. Lange teaches a module that prevents retried items from being placed back onto the queue unless certain conditions are met, which is

equivalent to prohibiting entry of the bus agent IDs onto the queue that do not comply with one or more predetermined queue entry rules (See Column 9 Line 51 – Column 10 Line 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Arimilli and Johnson with the queue entry rules of Lange, resulting in the invention of Claim 32, in order to prevent queuing of a command that has already finished completion (See Column 9 Line 51 – Column 10 Line 26 of Lange).

Claim Objections

49. Claim 24 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The term 'regulating' is synonymous with the term 'controlling' and thus Claim 24 does not further limit Claim 23.

Specification

50. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the specification.

51. The disclosure is objected to because of the following informalities: on Page 18 Line 21, the word "illustrating" in the phrase "...described below that illustrates illustrating the need..." appears to have been erroneously included. Appropriate correction is required.


Conclusion

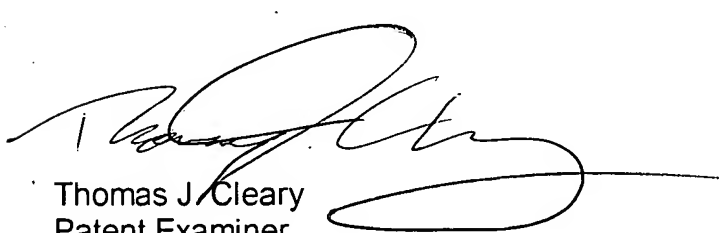
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Cleary whose telephone number is 703-305-5824. The examiner can normally be reached on Monday-Thursday (7-4), Alt. Fridays (7-3).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJC


MARK H. PRITCHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100


Thomas J. Cleary
Patent Examiner
Art Unit 2111